Docket No.: 02-38 US

REMARKS

Filing of the national phase of this application was accompanied by a Preliminary Amendment presenting a substitute set of 20 claims in place of the 23 claims of the priority document. Claims unchanged from the originally presented substitute set of claims (via Preliminary Amendment) has been treated in the above with the designation "original". Claims 1 through 20 inclusive presently stand rejected.

Rejection per 35U.S.C. § 102(b)

Claims 1-16 and 20 stand rejected under 35 U.S.C. §102(b) citing Sakata of record. A structural distinction of the present work over Sakata is immediately apparent in either interface member ("structure" being a sampling cone or skimmer cone) for the present work and Sakata. The reference shows these structures as solid members, or in the case of reference fig. 3 a gas inlet is provided "... at the base of sampling cone 151 diametrically opposite the interface pump port,..." . As illustrated in figure 3, this inlet appears to be a radial hole near the periphery of the skimmer cone structure leading to a gas source and discharging the gas on the low pressure side of the skimmer. Sakata therefore provides for introduction of his gas to a region of the interface that is radially remote from the aperture through which the plasma flows. In contrast, the present work describes, for either or both interface members (ie. interface structure), a conical structure with a central aperture, and the opposite surfaces of the member axially displaced to produce an aperture having axial extension forming a reaction zone and providing radial gas passage ducts between those surfaces to introduce that gas directly into the reaction zone created by the axially extended aperture. Note that the axial extension of the aperture is required to accommodate the duct(s) supplying the reactive gas. The specification at p. 11, lines 5-8, as well as numerous figures, supply antecedent basis for this distinction. Appropriate amendment to claim 1 is proposed emphasizing the physical structure of the interface structural member that supports direct injection of the substance to the reaction zone.

The gas introduced by Sakata through his inlet 210 enters the space between the skimmer and sampling cones where the plasma is relatively unconfined. The present work directs the

introduced substance directly to a reaction zone and that space is substantially radially defined by the aperture in the interface structure (skimmer and/or sampling cone).

The rejection of method claim 15 is expressed as based upon the structural limitations of that claim in respect of Sakata. Note that the steps of

> "substantially confining the plasma radially whilst flowing it from a higher pressure region towards a lower pressure region"

and

> "supplying a substance directly into the substantially radially confined plasma ..."

contains within its express language the distinction over Sakata. The addition of the substance occurs *between* regions of distinct pressure. Sakata is therefore distinguished even without further amendment.

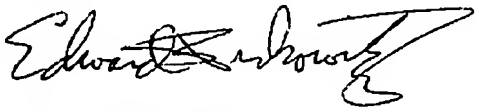
Rejection per 35U.S.C. § 103(a)

Claims 17-19 were rejected on Sakata with the admission that Sakata does not teach stagnation of the plasma flow in the interface region (wherein Sakata introduces a gas). The Examiner takes Official Notice that forming a region of stagnant flow in an interface is known citing Bajic, of record. The Examiner attributes to Bajic, recognition of a region characterized as having no net direction (for gas flow) and the Examiner applies this to the Sakata interface (structure) to reject dependent claims 17-19. In passing from a high pressure region to a low pressure region through the aperture traversing the interface member (skimmer or sampling cone) there is clearly a case of a preferred net direction of gas flow. The radially confined flowing plasma has only axial flow (as a practical matter). The premise of Bajic is that a side chamber is disposed to one side of a flow channel to produce a region of no net direction for gas flow, or to employ a baffle to produce the same result. This structural requirement of Bajic simply offers a substantially static density of ions to the solid angle subtended by the entrance aperture of Bajic's mass spectrometer. Neither motivation nor effect of the Bajic example leads to an expectation of enhanced chemical reaction with an injected substance in the reaction zone where (in the present

case) there is indeed a preferred net flow direction. Finally, claims 17-19 depend from independent claim 15 and should be allowed for that reason.

Applicant has amended claim 1 to provide improved clarity and distinction over the art. The distinction of the claims over the art has been elucidated and non-obviousness has been demonstrated for claims attacked on that basis. Applicant believes the claims are in condition for allowance and such action is respectfully solicited.

Respectfully submitted,



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